

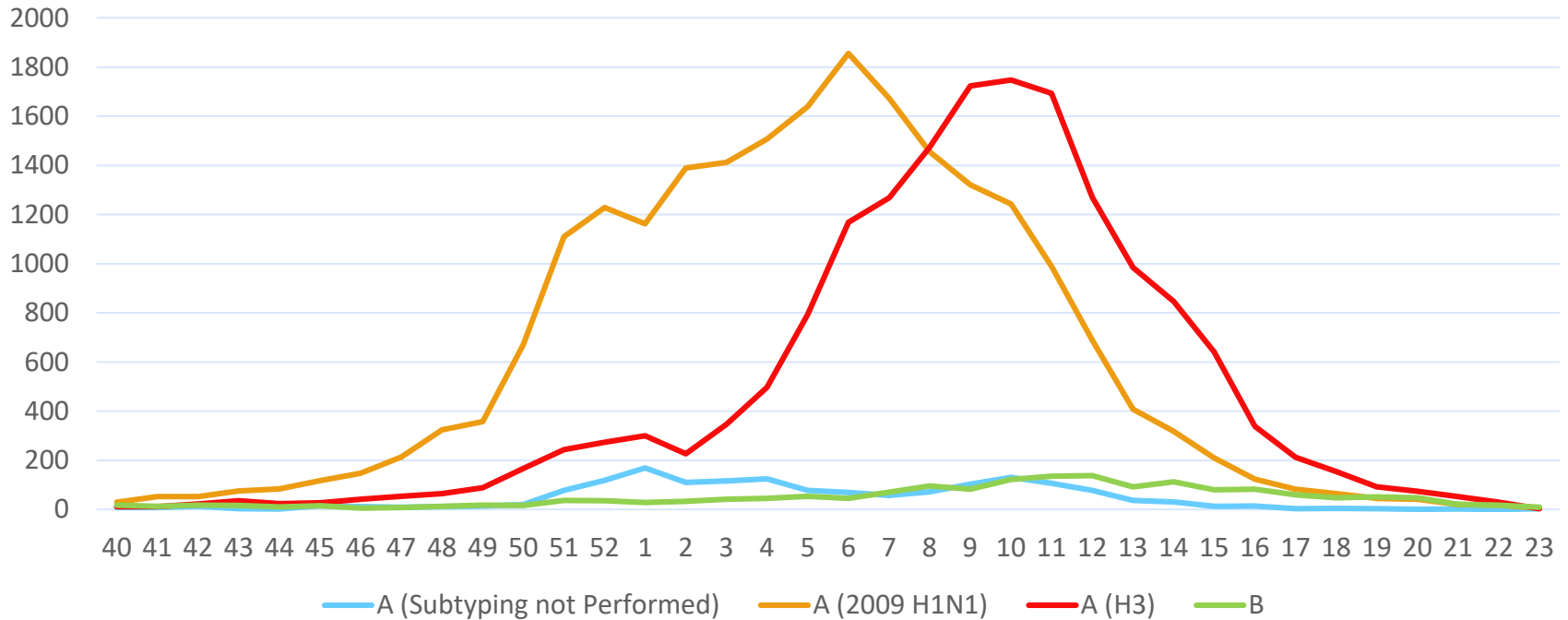
Influenza Surveillance Update

Lynnette Brammer, MPH

Advisory Committee on Immunization Practices

June 27, 2019

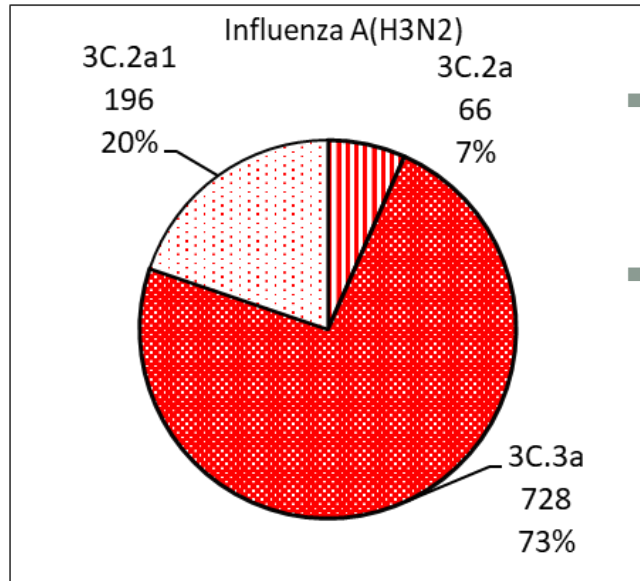
Influenza Positive Tests Reported to CDC by U.S. Public Health Laboratories, 2018-19 Season



Characterization of U.S. Influenza A (H1N1)pdm09 and B Viruses Collected September 30, 2018 to May 18, 2019

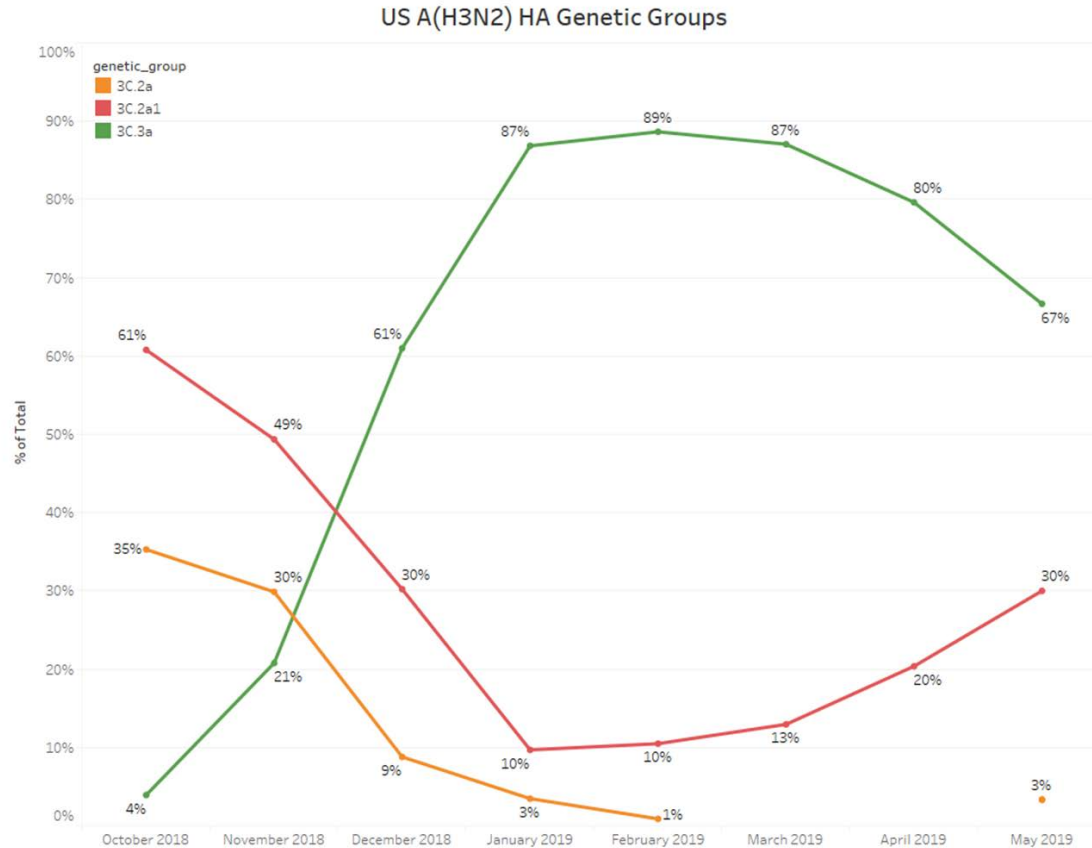
- All 1,251 influenza A (H1N1)pdm09 viruses tested belong to genetic group 6B.1A
 - 96.1% were well inhibited by ferret antisera against A/Michigan/45/2015
- All 203 B/Yamagata lineage viruses belong to Y3 clade
 - 100% were well inhibited by ferret antisera against B/Phuket/3073/2013
- 3 genetically and antigenically distinct B/Victoria subclades cocirculated
 - V1A (14.7%), V1A.1 (50.4%), V1A-3Del (34.9%)
 - The 2018-19 Northern Hemisphere vaccines contained a B/Colorado/6/2017-like V1A.1 virus

Characterization of U.S. Influenza A (H3N2) Viruses Collected September 30, 2018 to May 18, 2019



- Phylogenetic analysis of the HA genes of H3N2 viruses show co-circulation of multiple clades/subclades
- The proportion and geographic spread of viruses belonging to clade 3C.3a increased as the season progressed
- The 3C.3a viruses are antigenically distinguishable from the 3C.2a and 3C.2a1 viruses including the A/Singapore/INFIMH-16-0019/2016 (3C.2a1), a cell-propagated reference virus representing the A(H3N2) component of 2018-19 Northern Hemisphere influenza vaccines.
- Circulation of antigenically drifted viruses can impact vaccine effectiveness

Changing Proportion of H3 Genetic Clades/Sub-clades



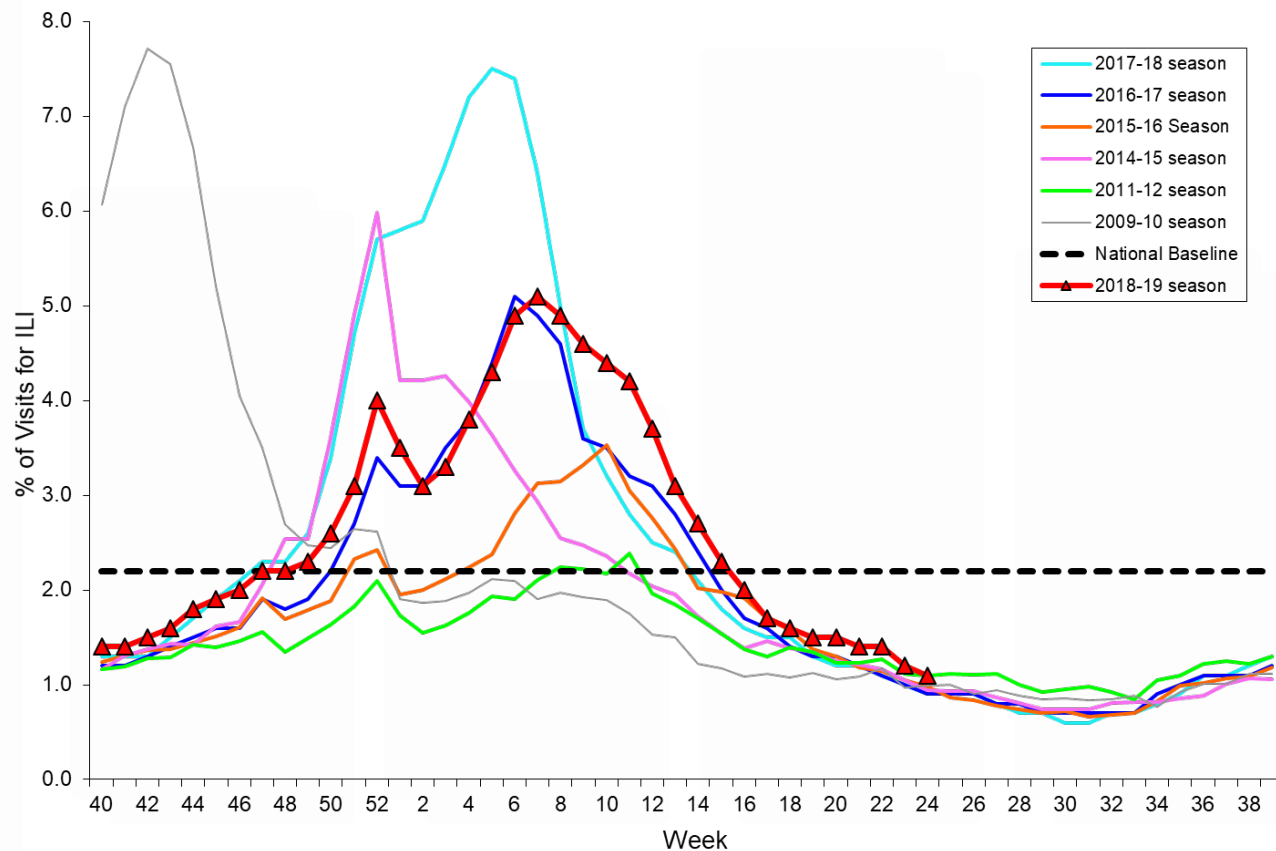
Vaccine Virus Selection for 2019-20

- WHO Consultation on the Composition of Influenza Virus Vaccines for Use in the 2019-2020 Northern Hemisphere Influenza Season - February 18 – 21
 - A/Brisbane/02/2018 (H1N1)pdm09-like virus
 - **A(H3N2) virus to be announced on 21 March 2019**
 - B/Colorado/06/2017-like virus (B/Victoria/2/87 lineage)
 - B/Phuket/3073/2013-like virus (B/Yamagata/16/88 lineage) – quadrivalent only
- March 6, 2019: Vaccines and Related Biological Products Committee Meeting

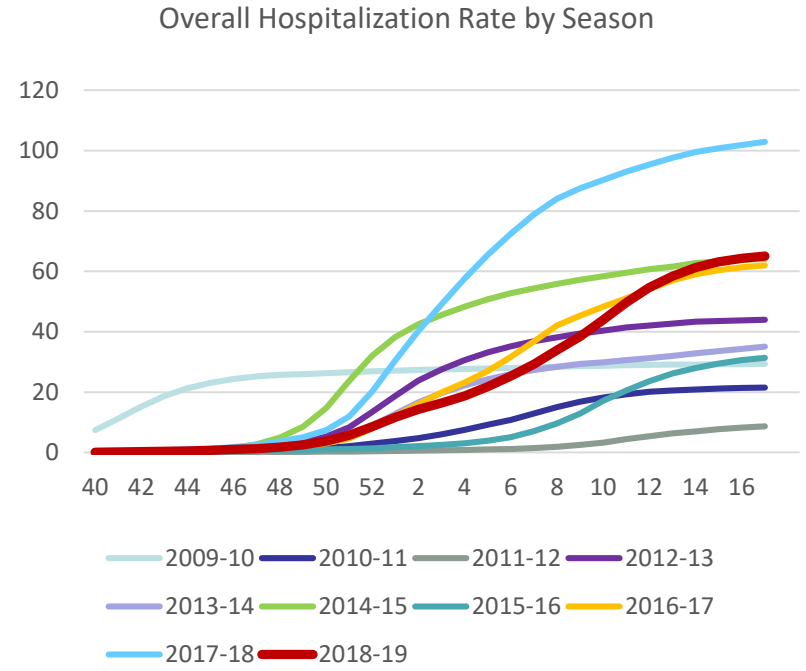
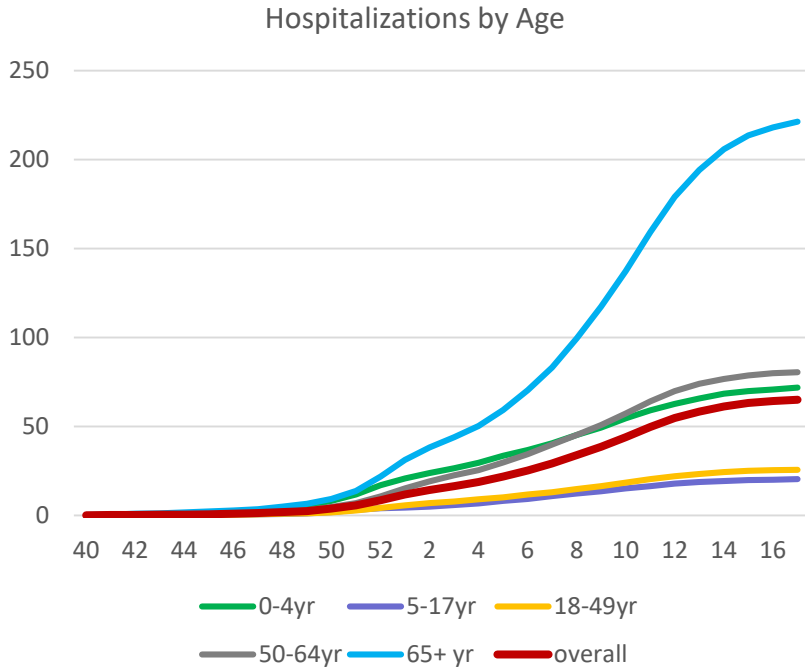
Vaccine Virus Selection for 2019-20

- WHO and FDA Vaccines and Related Biological Products Committee Recommended Composition of Influenza Virus Vaccines for Use in the 2019-2020 Northern Hemisphere Influenza Season:
 - A/Brisbane/02/2018 (H1N1)pdm09-like virus
 - A/Kansas/14/2017 (H3N2)-like virus (3C.3a)
 - B/Colorado/06/2017-like virus (B/Victoria/2/87 lineage)
 - B/Phuket/3073/2013-like virus (B/Yamagata/16/88 lineage) – quadrivalent only

Percentage of Outpatient Visits for Influenza-like Illness, 2018-19 and Selected Previous Seasons

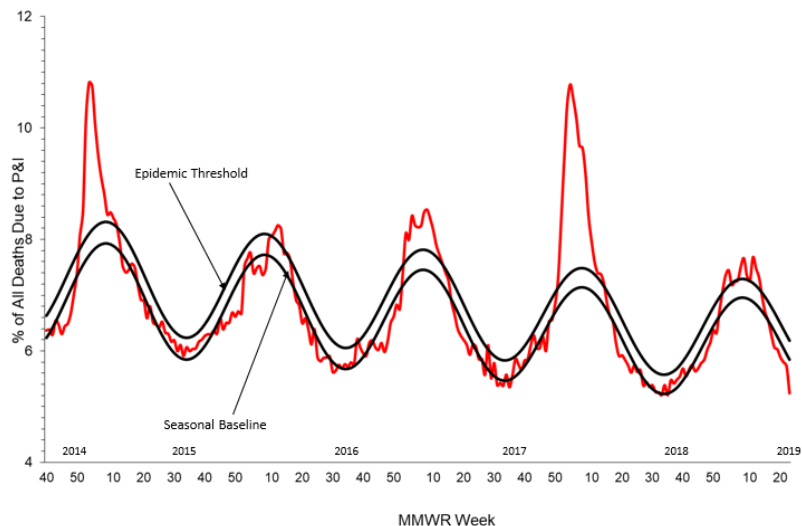


Laboratory Confirmed Influenza-Associated Hospitalizations

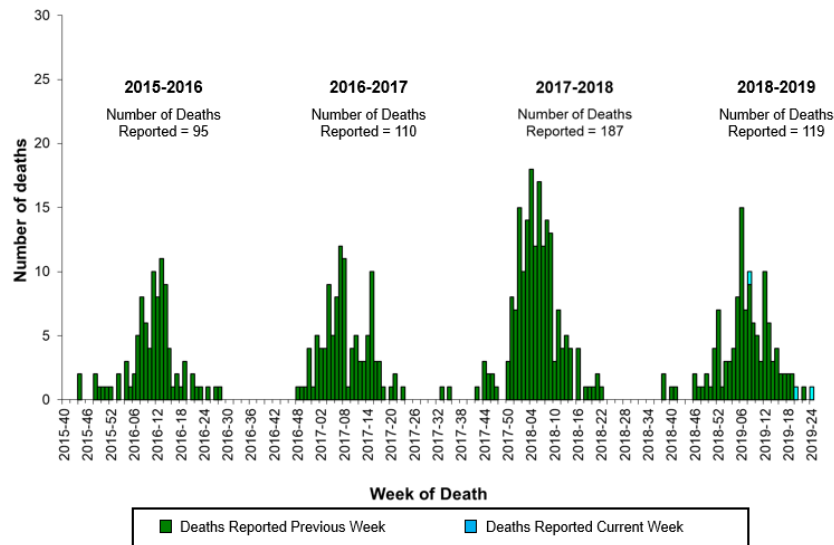


Influenza-Associated Mortality

Pneumonia and Influenza Mortality from
the National Center for Health Statistics Mortality Surveillance System
Data through the week ending June 8, 2019, as of June 20, 2019



**Number of Influenza-Associated Pediatric Deaths
by Week of Death: 2015-2016 season to present**



Influenza Severity Assessment by Age Group, 2003-04 – 2018-19 Seasons

- Severity of the 2018-19 season classified as a moderate overall and in all age categories
- Information on how CDC classifies severity is available at <https://www.cdc.gov/flu/about/classifies-flu-severity.htm>

Season	Child	Adults	Older Adults	All Ages
2018–19	Moderate	Moderate	Moderate	Moderate
2017–18	High	High	High	High
2016–17	Moderate	Moderate	Moderate	Moderate
2015–16	Low	Moderate	Low	Moderate
2014–15	Moderate	Moderate	High	High
2013–14	Moderate	Moderate	Moderate	Moderate
2012–13	Moderate	Moderate	High	Moderate
2011–12	Low	Low	Low	Low
2010–11	Moderate	Moderate	Moderate	Moderate
2009–10	Very High	Moderate	Low	Moderate
2008–09	Low	Low	Low	Low
2007–08	Moderate	Moderate	Moderate	Moderate
2006–07	Low	Low	Low	Low
2005–06	Low	Low	Low	Low
2004–05	Low	Moderate	Moderate	Moderate
2003–04	Very High	Moderate	High	High

2018-19 Flu Season: Preliminary Burden Estimates

CDC estimates that, from **October 1, 2018**, through **May 4, 2019**, there have been:

37.4 million – 42.9 million
flu **illnesses**



17.3 million – 20.1 million
flu **medical visits**



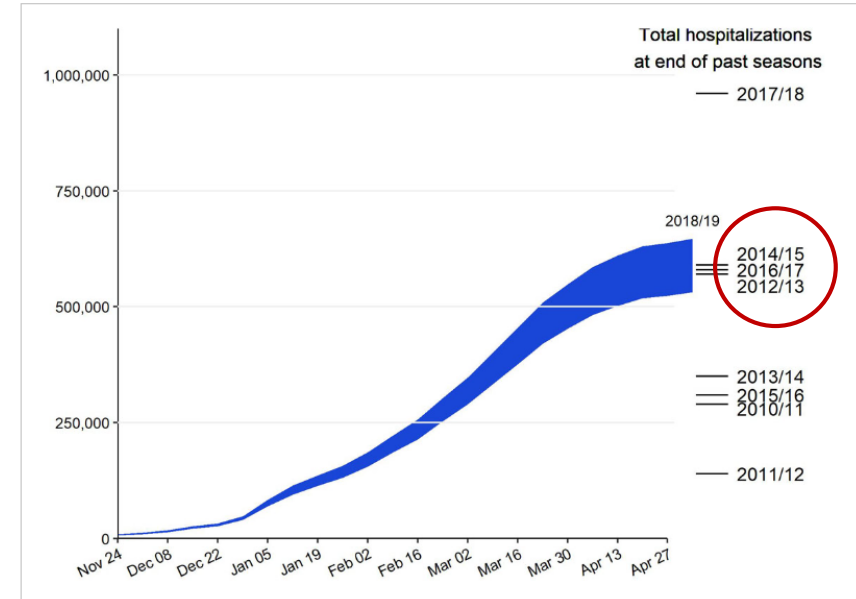
531,000 – 647,000
flu **hospitalizations**



36,400 – 61,200
flu **deaths**



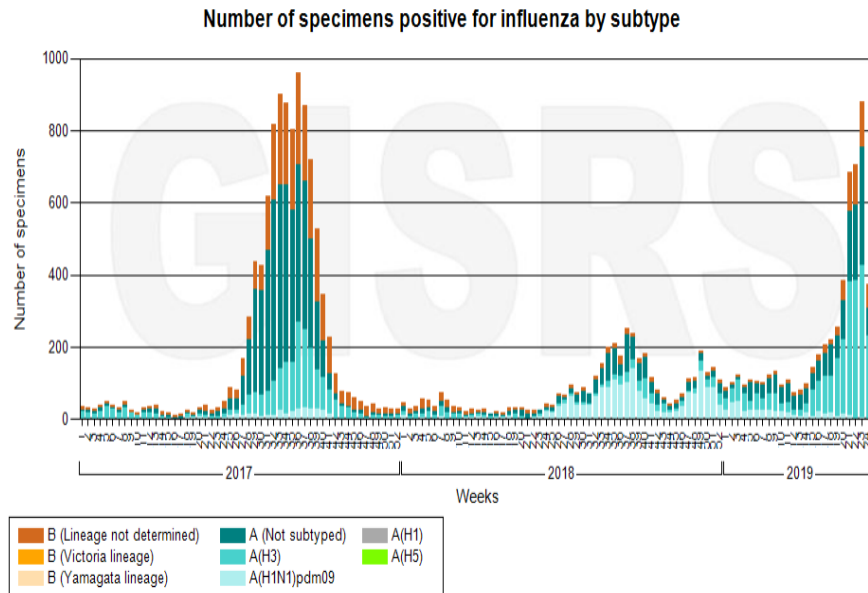
Preliminary Cumulative Estimates of Hospitalizations in the U.S.
2018–2019 Flu Season



Influenza Activity in Australia

- Australia's influenza season began earlier than typical this year
- Number of reported influenza positives similar to 2017
- Currently influenza A(H3N2) predominant
- Multiple clades detected
 - 3C.2a1b, not 3C.3a, is the predominant clade

Australia



Summary

- The severity of the 2018-19 influenza season was classified as moderate
- The season was notable for 2 waves of influenza A viruses of similar magnitude, an influenza A(H1N1)pdm09 wave and an H3N2 wave
- The majority of H3N2 viruses belonged to the 3C.3a genetic group which is antigenically distinct from the 3C.2a genetic group
- The recommended H3N2 component for the 2019-20 Northern Hemisphere vaccine is an A/Kansas/14/2017-like virus, which belongs to genetic group 3C.3a

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

